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1. (Four Times Amended) An isolated and purified bacterial reverse transcriptase (RT) of (SEQ ID. 1), or a substantially homologous amino acid sequence which synthesizes msDNA, and which RT further comprises a sequence of amino acid residues as follows: Tyr-Xaa<sub>6</sub>-Asp-Asp (SEQ ID No:50), wherein Xaa<sub>6</sub> is alanine or cysteine and further comprises a sequence of amino acid residues as follows: Asn-Xaa<sub>1</sub>-Xaa<sub>2</sub>, wherein Xaa<sub>1</sub> is a hydrophobic residue selected from the group consisting of alanine, leucine, and phenylalanine, and Xaa<sub>2</sub> is a hydrophobic residue selected from the group consisting of leucine, valine, and isoleucine.

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7. (Four Times Amended) An isolated and purified bacterial reverse transcriptase (RT) which synthesizes msDNA and which is essential for the synthesis of msDNA *in vivo*, said RT comprises a sequence of amino acid residues as follows: Tyr-Xaa<sub>6</sub>-Asp-Asp, wherein Xaa<sub>6</sub> is alanine or cysteine, as shown in SEQ ID No:50, wherein said sequence is located in subdomain 5 shown in Fig. 14 at positions 175-191 of SEQ ID No:32, at positions 175-191 of SEQ ID No:33, at positions 175-191 of SEQ ID No: 34, at positions 168-184 of SEQ ID No: 35, at positions 159-175 of SEQ ID No:36, at positions 171-187 of SEQ ID No:37, and at positions 157-173 of SEQ ID No:38, and further comprising the 61 amino acid residues as shown by black dots in Figure 14 of SEQ ID NOS:32-28, wherein h is a hydrophobic residue and p is a small polar residue.

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12. (Four Times Amended) The isolated and purified RT of claim 4 which RT has in the following order starting from the N- to the C-terminus:

(1) an amino acid sequence of Ser-Xaa<sub>3</sub>-Xaa<sub>4</sub>-Xaa<sub>5</sub> (SEQ ID No: 51), wherein Xaa<sub>3</sub> is a hydrophobic residue selected from the group consisting of valine, phenylalanine, leucine, and isoleucine, Xaa<sub>4</sub> is a polar residue selected from the group consisting of threonine, asparagine, lysine, and serine, and Xaa<sub>5</sub> is a hydrophobic residue selected from the group consisting of tryptophan, phenylalanine, and alanine;

(2) an amino acid sequence of Asn-Xaa<sub>1</sub>-Xaa<sub>2</sub>, where Xaa<sub>1</sub> is a hydrophobic residue selected from the group consisting of alanine, leucine, and phenylalanine, and Xaa<sub>2</sub> is a hydrophobic residue selected from the group consisting of leucine, valine, and isoleucine;

(3) an amino acid sequence Tyr-Xaa<sub>6</sub>-Asp-Asp (SEQ ID No: 50) wherein Xaa<sub>6</sub> is alanine or cysteine; and

(4) an amino acid, Xaa<sub>7</sub>, where Xaa<sub>7</sub> is a polar residue selected from the group consisting of arginine, lysine, glutamic acid, glutamine, and valine.